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ABSTRACT

The authors, critical of psychoanalytic paradigms used in the analysis of the perpetrators of child abuse, formulate an alternative model based on theoretical and empirical insights from social learning theory. The discussion focuses on the environmental contingencies of the sociopsychological states of families. To test several hypotheses based on the model, which suggests that sources of stress and relatively few response alternatives are associated with increased danger, the authors surveyed a 20% sample (N=78) of active cases under supervision of Protective Service workers during 1973-1974 at the Department of Children and Family Services (DCFS) in Chicago. The empirical findings indicate that, even within the subpopulation of families under DCFS supervision, the model is able to discriminate among families with greater degrees of perceived danger for the children. Besides the major factor of the child's age, factors which center on the female caretaker in the family contribute most to the discrimination. Specifically, measures which indicate the degree of stress the female caretaker may be experiencing with regard to her personal expectations of income and educational attainment as well as the potentially stressful situations in which the caretaker must perform her child-rearing tasks are revealed to be important. (Author)

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THE CORRELATED STRUCTURE OF CHILD ABUSE: ADVANCES TOWARD A SOCIAL INDICATOR MODEL

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I. INTRODUCTION AND RELATED READING

In the last few years, increasing public attention has been directed at the phenomenon of child abuse. Much of this interest has been a result of sensationalism in the press, to the dismay of those social service personnel who deal with incidents of abuse on a daily basis and those social scientists who seek a rational discussion and investigation of this malady.

For a sociologist, the aspects of child abuse pertinent for study are as manifold as the elements of the social system in which the phenomenon occurs. Topics such as the mass media's treatment of news of child abuse, frequency of abuse and its reporting, public response to abuse, attitudes toward corporeal punishment, medical and legal definitions and consequences of abuse, evaluations of social programs dealing with abuse, and biased reporting of abuse incidents by physicians and hospitals all warrant careful investigation.

This study, instead of focusing on any of the above topics, has limited itself to considering the correlates of abuse that exist in the environment of the families that have sought or have been forced to seek help from the Department of Children and Family Services (DCFS) in Chicago, Illinois. Professions in several service areas are mandated by state law to report any suspected incidents of abuse to DCFS. It is not naively assumed, however, that the sample studied from this agency is representative of society at large. The vast majority of child abuse cases reported to DCFS are referrals from hospitals. Only 5 cases out of 643 reported in Chicago during fiscal year 1973 were from private physicians, which is some indication that a reporting bias exists. (DCFS, 1974.)

The lack of data available for a control group is a problem. However, this difficulty was partially overcome by comparing measures obtained for families with reported child abuse with those for families indicating two

other types of family problems, minor in need of supervision (MINS) and neglect and dependency of children. Since practically all of the empirical studies utilizing public agency data have reported a skewing toward the lower socioeconomic levels, few have sought to compare sociological chacteristics of families with differing symptoms. For this reason, this study is seen as a contribution to understanding the underlying dynamics of child abuse with respect to such differences. Furthermore, the study is encouraging to those who seek to develop empirical measures exogenous to the psychological state of a family member to distinguish abusing families from families with lesser degrees of danger for their children.

Precoded questionnaires were distributed among social workers at the four Chicago district offices of the Department of Children and Family Services during parts of 1973 and 1974. Workers in the Protective Service and Abuse Divisions provided information on 54 individual and family characteristics for 20% of their caseload. Approximately 150 questionnaires were distributed to the district offices; 78 were returned.

A. Related Literature

The analysis presented in this paper utilizes the social learning theory perspective, which will be outlined later. Most previous research on child abuse, however, has taken a distinctly psychoanalytic approach (e.g., Pollack & Steele in Helfer & Kempe, 1968; Nurse, 1964; Gladstone, 1970: Spinetta & Rigler, 1972). This approach seeks and finds the explanation of abusive behavior in the psychohistory of the individual. At its worst, the psychoanalytic approach produces theoretical generalizations such as "...a general defect in character--from whatever source--is present in the abusing parent allowing aggressive impulses to be expressed too freely." (Spinetta & Rigler, 1972: 301)

At its best, the approach only elaborates theoretical constructs to dramatize the subjective identification struggles of the perpetrator. This struggle, in the mind of the perpetrator, is said to result in an identification transformation in which" . . . the infant is perceived as the parents' own bad childhood self." (Helfer & Kempe, 1968: 131.) Causal mechanisms of such transformations and hence abuse consist of childhood experience, e.g., lack of mothering.

The psychoanalytical approach, in spite of its reliance on nonempirical constructs, has influenced perspectives that are not psychoanalytic in the classical sense but which make use of the historical implication. Goode, for example, writes that abusive behavior "is not explained, of course, so much by social pressures of their daily lives, as by prior socialization . . . " (Goode, 1971: 633.) Other researchers influenced by the psychoanalytic perspective have taken account of the indicators of stress in the environment of families but have failed to make statistical inferences on these factors, relying instead on speculative diagnostic categorization (Bryant, 1963); and even when statistical associations between abuse and immediate life situations are found, researchers often reject the role these structural aspects play in abuse in favor of the totally ideographic explanation. Young, for example, after finding several such correlates, concludes: "[F]or some unknown reason some people are born with a predisposition toward this kind of personality." (Young, 1964: 78.)

Exceptions to the above pattern of research are found in the work of Gil (1968) and, to a lesser extent, Elmer (1967). Elmer operationalized stress indicators and surveyed a Pittsburg hospital radiology department. In spite of her small sample, she was able to conclude: "[T]hese data show a clear connection between the phenomenon of child abuse and burdens intimately related to pregnancy and children." (Elmer, 1967: 77.)

Gil similarly reports that his massive statistical compilation of abuse reports indicates the importance of stress and child rearing demands, e.g.: "59 percent of the cases were checked on 'mounting stress on perpetrator due to life's circumstances.'" (Gil, 1970: 129.) Gil makes little use of any theoretical perspective, relying on factor analysis for an a posteriori typology, and he fails to compare the abuse to the nonabuse cases. Although he advocates a multidimensional approach to the study of child abuse, Gil is content to view the causes of abuse as more cultural than anything else, particularly the permissive attitude toward violent responses and the absence of legal sanctions against such responses. (Gil, 1970: 135.)

In short, previous research on child abuse has been characterized by speculative theoretical orientations rather than by empirically grounded theories of aggressive behavior, by empirical generalizations informed more by this speculative bias and based on case studies rather than on sound statistical inference, and by conclusions producing policy implications that focus on the control and regulation of individuals and exclude consideration of salient structural characteristics of families, communities, and environment.

In the present paper, the false theoretical dichotomy between individual and environment is challenged; at the same time an empirical system that focuses on the environmental indicators of increased probability of abuse is operationalized. The remainder of this section will discuss the first of these objectives.

In an article by Gelles, the one dimensionalism of the psycholoanalytic approach to abuse is sharply attacked as being too narrow, logically inconsistent, and not empirically contingent. Gelles says that in the articles he has reviewed on abuse, 19 different personality traits are used to describe abusers and only 4 traits are mentioned by two or more authors.

Although he conducts no research himself, he applies the sociological perspective to the work of others and devises a sociopsychological model of child abuse. This model appears in figure I. (Gelles, 1973.)

Gelles also discussed the fact that younger children are abused more frequently in a way that is compatible with his model and with the perspective shared in this paper. He cites the following explanation of the relationship of child's age with frequency of abuse:

1. The child lacks physical durability.

2. Because the young child is not socially capable, he produces greater frustrations for the parents than the socially capable child. ("Since the parent cannot 'reason' with the infant, he may feel his only course of action is physical punishment.") (Gelles, 1973: 616.)

3. The birth of the infant may increase stress by increasing the economic hardship of the family, interrupting the education of the parent or parents, etc. (Gelles, 1973.)

Instead of relying on psychoanalytic interpretations of abuse even to the extent that Gelles does, the explanation given in this paper will utilize the knowledge that has accumulated from the empirical testing of sociopsychological models of behavior. Foremost among these perspectives is Bandura's social learning theory of aggression.

The fundamental orientation of a social learning perspective with regard to aggression is described in the following passage:

> "The social learning theory of human aggression adapts the position that man is endowed with neurophysiological mechanisms that enable him to behave aggressively, but the activation of these mechanisms depends upon appropriate stimulation and is subject to cortical control. Therefore, the specific forms that aggressive behavior takes, the frequency with which it is expressed, the situations in which it is displayed, and the specific targets selected for attack are largely determined by social experience." (Bandura, 1973: 29-30.)

The general model conceives of aggression as one of the possible adaptive responses to frustrations or anticipated actions. The relations are illustrated in figure 2.

FIGURE 1

A Sociopsychological Model of the Causes of Child Abuse (Gelles, 1973: 619.)

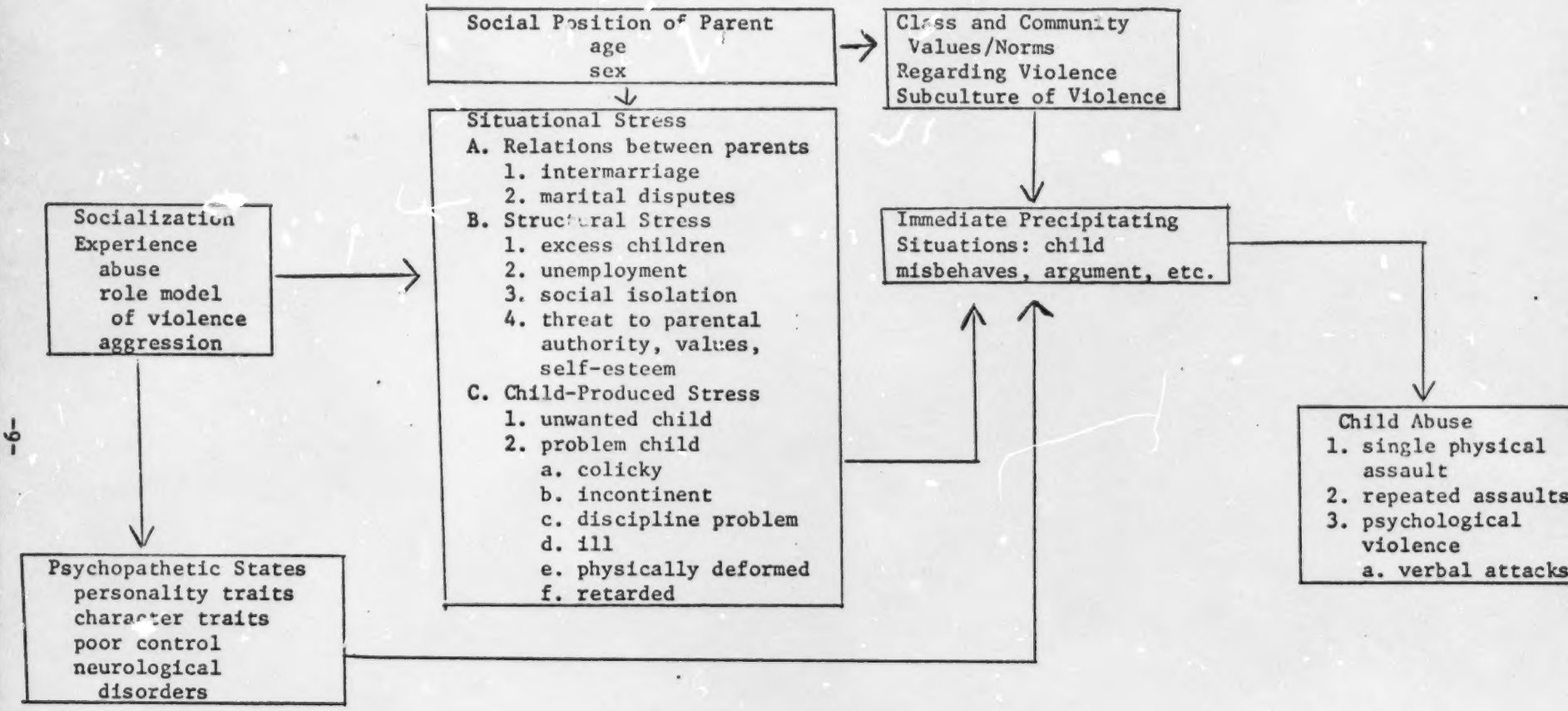
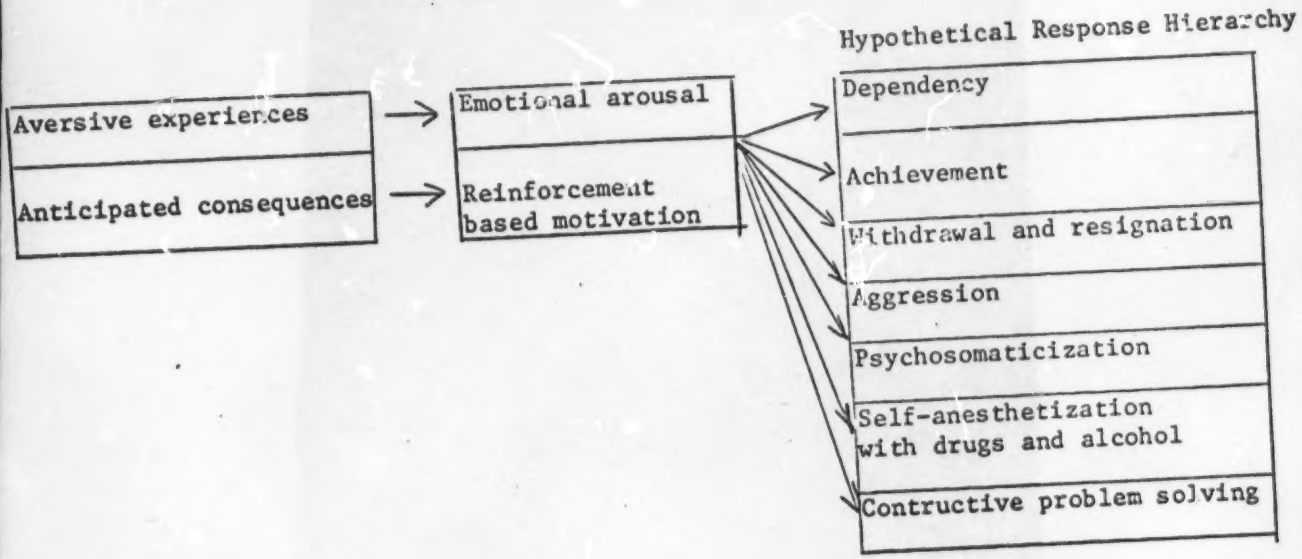


FIGURE 2

SOCIAL LEARNING THEORY (BANDURA, 1973: 54.)



This list of actions on the right in figure 2 can be conceived of as a hierarchy of responses, and the response that is selected may be considered a function of learning and regulation. The process of learning basically consists of modeling behavior. Modeling consists of four basic processes: 1. attentional process--on the basis of results a model is selected for observation, 2. long-term memory, 3. motor reproduction process, and 4. reinforcement and motivational contingencies.

Bandura describes three methods of regulation that select a given response: 1. stimulus control-response paired with stimulus that elicits and directs response; 2. reinforcement control-response on the basis of anticipated reinforcement, real or symbolic, other- or self-originating; and 3. cognitive control-conscious guidance of behavior. (Bandura, 1973.)

In the next section these concepts are used to inform the theoretical orientation toward aggressive social behavior. This orientation, in turn, is used to develop an empirical system of environmental indicators of increased probability of abusive responses.

B. Theoretical Orientation

Arousal is precipitated by many factors; chief among them are stimuli produced by child rearing demands. A child's cry usually communicates to the parent the need for a response on his/her part. A more or less continuous state of arousal can be imagined for parents with several children, especially young children who have greater dependence upon their parents, and for parents who have little or no help in meeting these demands.

The absolute number of responses available may affect the probability that an aggressive response will occur. Bandura reports on studies by Tannenbaum showing "that nonagressive sources of arousal enhance aggressive behavior under conditions in which this is the only mode of response available." (Bandura, 1973: 56.) Here is the indication of how normal child

rearing stimuli might instigate an aggressive response if other responses are not elements of the response hierarchy. The restraints imposed on the response hierarchy thus become important factors.

Notterman and Trumbull hypothesize three processes that constitute the adequate response to stress: 1. detection, 2. identification, and 3. response availability. (Buckley, 1968: 351.) It can be seen that if restraints limit the number of adequate responses available, the stress will not be reduced appropriately.[1] This, in turn, increases the likelihood of aggressive responses. Given that a finite set of responses exists and that the parent is pressured by the nature of the child rearing demands to respond in a finite time, an aggressive response would seem more possible under conditions in which the stress is high and response alternatives limited. Bandura observes that "[p]arents who have to cope with many children in congested quarters are often forced to punitive measures to halt squabbles between family members who repeatedly get in one another's way." (Bandura, 1973: 165.)

The unavailability of responses preventing an adequate adaptive response to stress are viewed as systemic by Bandura. He notes: "The obstacles [to responses that provide reinforcement and reduce stress] may take a variety of forms. Sometimes they are created by environmental barriers, physical or social, such as impoverished living conditions, obstructions, and privations resulting from overcrowding, and restrictive laws and discriminating social practices." (Bandura, 1973: 167.)

This study will operationalize variables that contribute to the stress experienced by the individual variables that have been conceptualized as arising from child rearing demands, sociocultural or environmental stress, and environmental restraint. Bypassed will be any measures of the internal states of the individual.

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[1] This scheme is similar to but not as deterministic as the frustration-aggression model of Dollar & Miller (1932).

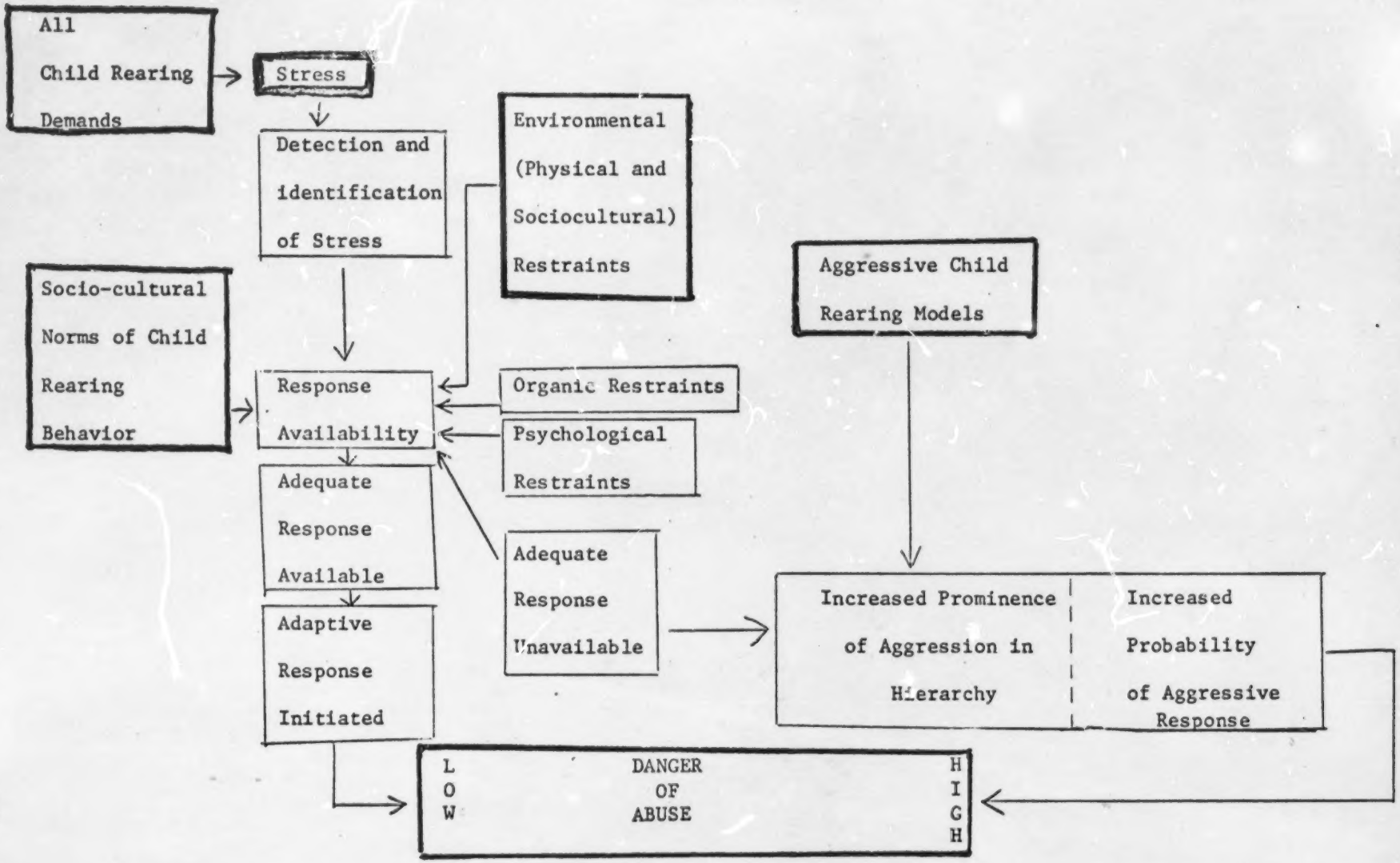
But the independent action of a variable that measures stress may not be clearly distinguishable from its action as a restraining variable. The feedback effect of environmental restraints on the levels of stress forces the issue to one of chronology. Therefore, the variables operationalizing these two concepts will be subject to reinterpretations in the light of statistical analysis.

Strong evidence exists from previous research that abuse is trans-generational. Although those reporting on this phenomenon tend toward a psychoanalytic interpretation, the facts are compatible with an interpretation utilizing learning theory. Much of the research accumulated by Bandura emphasizes the significance of an aggressive model in eliciting aggressive responses on the part of the observer. The evidence of abused parents later abusing their children suggests that an entire interaction pattern has been learned by the parent and is being transferred to a new situation. The presence of an aggressive model in the parents' background serves to guarantee the presence of an aggressive response in the parents' hierarchy set. It is reasonable to argue, as Bandura does, that all of these factors serve as disinhibitors for aggressive behavior, applied to new situations.

Figure 3 summarizes what has been said regarding the general theory of abuse. The full model incorporates psychological, social, and cultural concepts. However, this study is interested in operationalizing only those variables that are observable, i.e., external to the psychological state of the abuser (double boxes). By determining to what extent the variance in the danger to the children is explained by the combination of child rearing stress and restraint variables, the usefulness of an indicator model of abuse can be assessed. A discussion of the findings follows.

FIGURE 3

Flow Chart of General Theory of Abuse



II. Findings

No control group of so-called "normal" families was used in this study. The sample, as explained earlier, is entirely from the Department of Children and Family Services. It is likely that if the measures investigated were able to discriminate, that is, illustrate the differences among the three types of cases, they could account for differences between the sample population and the general population. In this way, the findings summarize the strength of predicting differences among samples within a population generally considered homogenous except along clinical psychological dimensions.

After the data were processed by computer, chi- squared tests were run to verify the hypotheses concerning the nominal variables, and analysis of variance methods were used to test the significance of the hypotheses involving interval data. The summary of findings is presented in this section, followed by a more detailed discussion of the findings and their implications for the theory set forth earlier. The summary and discussion of results that follow guided the final analyses of the data; multiple regression and factor analysis were used to evaluate the full model as described in this paper. Hypotheses are stated in expected form, not in the null form used for significance tests. All hypotheses were accepted or rejected on an .05 level of significance.

General Questions

Hypothesis 1: The types of cases would not differ in the distribution of differing ethnic backgrounds of the female adult.

Confirmed. Thirty-nine per cent of sampled adult females were white; 61% nonwhite, with no significant variation among the criterion categories. The disporportionate presence of nonwhites in the sample may indicate natural biases introduced by studying the clients of a public agency.

Hypothesis 2: Families classified as abuse cases would not reflect a greater proportion of public aid recipients than the other categories.

Confirmed. Sixty-one per cent of the sample was on some type of aid with no signficant variation among criterion categories.

Hypothesis 3: The types of cases would be no different with regard to the child's sex.

Not confirmed. A greater frequency of female children classified as MINS accounted for this significant finding.

Hypothesis 4: Families classified as abuse cases would reflect a greater proportion of one-parent households.

Not confirmed. There is a strong tendency, however, that after agency involvement the child will live apart from both parents; 44.9% of the children in this sample have this status. In studying this percentage, one must consider that a number of children are already apart from their families and in a hospital when the agency receives the suspected abuse report. Furthermore, 55% of the female adults sampled live as single parents with no significant variation among criterion categories. This variable is practically constant for all three criterion situations.

Hypothesis 5: Families classified as abuse cases would report owning an automobile less frequently.

Not confirmed. The tendency was in the opposite direction. Only 27.4% of the sample reported owning an auto. The abusing families accounted for 60% of the owners.

Environmental Restraints

Hypothesis 6: The mean number of rooms in the household would be lowest for abuse cases.

Confirmed.

Hypothesis 7: The mean distance to next of kin would be greatest for abuse families.

Not confirmed. A tendency existed in the opposite direction.

Hypothesis 8: The mean frequency with which babysitters are used would be smallest for abuse cases.

Not confirmed. A tendency in the inverse direction was present.

Hypothesis 9: The mean frequency with which day-care centers are used would be smallest for abuse cases.

Not confirmed. A tendency in the expected direction was present.

Child Rearing Stress*

Hypothesis 10: The mean age of the child in the study would be least for abuse cases.

Confirmed. The younger the focal child at the time the case was opened, the more likely the incidence of abuse.

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*Results appear in table 1.

Hypothesis 11: The mean number of family members in the household would be largest for abuse cases.

Not confirmed. The inverse was confirmed.

Hypothesis 12: The mean number of children in the family would be largest for abuse cases.

Not confirmed. The inverse was confirmed.

Hypothesis 13: The mean number of children under five years of age in the family would be highest for abuse cases.

Not confirmed. An .05 significance level was not achieved but a strong tendency in the expected direction was present.

Hypothesis 14: The mean proportion of children under five years old to the total number of children would be largest for abuse cases.

Confirmed.

Hypothesis 15: The mean proportion of time in which the female is responsible for child care would be greatest for abuse cases.

Not confirmed. A tendency in the expected direction was present.

Environmental Stress*

Hypothesis 16: The mean of highest grade of school completed by the adult male would be lowest for abuse cases.

Not confirmed. The inverse was confirmed.

Hypothesis 17: The mean of highest grade of school completed by the adult female would be lowest for abuse cases.

Not confirmed.

Hypothesis 18: The mean income of adult males would be lowest for abuse cases.

Not confirmed.

Hypothesis 19: The mean income of adult females would be lowest for abuse cases.

Confirmed.

Hypothesis 20: The mean length of time that the family has lived in Chicago would be lowest for abuse cases.

Not confirmed. Strong tendency in expected direction, but overall length of time spent living in city dispells notions that recent immigrants to the city may be more likely to abuse.

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*Results appear in table 1.

Hypothesis 21: The mean time spent living at the present address by the family would be lowest for abuse cases.

Confirmed.

Hypothesis 22: The mean number of jobs held by the head of household in the last three years would be highest for the abuse cases.

Not confirmed.

Hypothesis 23: The mean cost of housing would be least for the abuse cases.

Not confirmed. A tendency in the expected direction was present.

Hypothesis 24: The mean proportion of housing cost to female's income would be largest for abuse cases.

Not confirmed. A tendency in the expected direction was present.

Hypothesis 25: The mean age of the adult male would be youngest for abuse cases.

Confirmed.

Hypothesis 26: The mean age of the adult female would be youngest for abuse cases.

Confirmed.

Hypothesis 27: The mean ratio of family size to number of rooms (crowding index) would be largest for abuse cases.

Not confirmed.

Hypothesis 28: The mean ratio of adult male income to years of education completed (male's income/education ratio) would be smallest for abuse cases.

Not confirmed. A strong tendency in the expected direction was present.

Hypothesis 29: The mean ratio of adult female income to years of education completed (female's income/education ratio) would be smallest for abuse cases.

Confirmed.

III INTERPRETATION

It can be seen that of the 29 hypotheses, 10 were confirmed. Furthermore, it should be noted that of the 24 variables presented in table 1, 16 behaved as expected although only 7 of these were significant. The fact, however,

that 16 of the variables vary in the expected direction is encouraging. Unexpected findings include the following variables: Number of Children, Family Size, Male's and Female's Education, Distance to Kin, Times Babysitter Used, and Crowding Index. Each of these findings will be discussed in turn, with the possibility that a reinterpretation of the variables or the theory will improve our understanding.

It was assumed that the number of children and the family size would contribute to the child rearing and homemaking demands. The findings, however, indicate that if the stress concept is not abandoned, the large families have less stress for the female. In retrospect, we see that the original interpretation of the effect of this variable was with regard to quantity. A reinterpretation of these two variables in light of the findings would indicate that family size is an indirect measure of the age of the family: the smaller the family, the younger the family. This measure might, therefore, reflect the experience of the female in child rearing. Larger, older families would tend also to have older children who are able to care for themselves and accept some of the child rearing responsibility. These new assumptions are consistent with the original concept of stress and will be used in analyzing the contributions these variables make in the subsequent analyses.

Also unexpected was the finding that suspected abusers had remained in school at least as long or longer than the parents in the other groups. To observe the combined effect of income and education, hypotheses 28 and 29 were constructed and tested. These findings indicate that more than low income is involved in producing stress for the parent. The comparison of expected level of income, anticipated according to years of education completed, with actual income produces a degree of stress beyond that created by the absolute level of deprivation. The ratio of income per year

of education operationalizes what is usually referred to as status inconsistency.[2] As will be seen later, this serendipitous finding is indeed significant to the study. The male's income/education ratio, however, had to be abandoned in the extended analysis because of excessive missing data.

Distance to Kin was originally viewed as contributing to stress because greater distances would indicate the inconvenience of using kin as alternative caretakers. It appears from the findings, however, that families classified as abusive are closer to kin and utilize babysitters more often. It is reasonable to assume that some of this babysitting is performed by the extended kin. In light of this interpretation, the variable can be understood as the proximity of an alternate caretaker. But if we also assume that the findings observed in section I regarding the transgenerational effects of abuse are representative, then the variable Distance to Kin may indicate that when alternative child care is used it is accompanied by aggressive child rearing models. The variable is tentatively reinterpreted to measure not so much isolation from kin as availability of nonaggressive child rearing models. This notion, admittedly based on findings exogenous to this study, will be used because of the consistency with which the transgenerational effect has been reported and its compatibility with the social learning theory outlined in section I.

With regard to the Crowding Index, it should be noted that the mean index for all groups is over one. This indicates that all of the groups experience crowded conditions, but that the possible stress associated with such a condition does not affect the mode of adaptation, or maladaptation, to the conditions. For this reason, the Crowding Index was not used in the final analysis.

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[2] This finding was serendipitous in the sense that the relationship was not conceptualized prior to the analysis. Acknowledged is given to B. Erbe for pointing out the inconsistency reflected in the data.

Having reinterpreted some of the original notions concerning the variables and being satisfied that these reinterpretations were consistent with the general theory, we used the variables that appear in table 2 in the final stage of the analysis.

Table 1

Summary Table of Means and Findings

Hyp. No.	Variable	Means for MINS	Means for Dep.-Neg.	Means for Abuse	Means for Total	Expected Direction	.05 Sig.
Environmental Restraints							
Hyp. 6	No. of rooms	5.00	4.40	3.70	4.30	yes	yes
Hyp. 7	Distance to kin (in miles)	4.80	5.60	3.44	4.40	no	no
Hyp. 8	Times per month babysitter used	1.30	2.50	5.10	3.40	no	no
Hyp. 9	Times per month care center used	1.20	2.00	.70	1.20	yes	no
Child Rearing Stress							
Hyp. 10	Child's age	13.20	8.60	4.50	8.00	yes	yes
Hyp. 11	Family size	6.10	5.20	4.20	5.00	no	yes
Hyp. 12	No. of children	4.40	3.80	2.60	3.40	no	yes
Hyp. 13	No. of children under five	.70	1.40	1.50	1.30	yes	no
Hyp. 14	Proportion of children under five	.21	.41	.65	.47	yes	yes
Hyp. 15	Proportion of child care for which female is responsible	.64	.74	.83	.77	yes	no
Hyp. 16	Last grade completed by male	8.20	6.30	10.30	8.80	no	yes
Hyp. 17	Last grade completed by female	9.00	8.60	9.60	9.10	yes	no
Hyp. 18	Male's income	$4667	$6911	$5255	$5562	no	no
Hyp. 19	Female's "	$6969	$5108	$2732	$4545	yes	yes

Hyp. No.	Variable	Means for MINS	Dep.-Neg.	Abuse	Total	Expected Direction	.05 sig.
Hyp. 20	Years in city	20.10	15.60	11.30	14.80	yes	no
Hyp. 21	Years at address	3.40	.90	.80	1.50	yes	no
Hyp. 22	No. of jobs	1.10	2.50	1.50	1.80	no	no
Hyp. 23	Housing cost	$165	$141	$126	$139	yes	no
Hyp. 24	Proportion of housing cost	.25	.30	.40	.33	yes	no
Hyp. 25	Male's age	40.10	40.00	29.20	35.50	yes	yes
Hyp. 26	Female's age	34.30	30.30	25.10	29.10	yes	yes
Hyp. 27	Crowding index	1.19	1.27	1.17	1.20	no	no
Hyp. 28	Male's income-education rato	875.00	1401.00	482.00	810.00	yes	no
Hyp. 29	Female's income-education ratio	825.00	521.00	270.00	477.00	yes	yes

Table 2

Variable of Note

Child's age . . . . . .Significant*

Male's age . . . . . .Significant

Female's age . . . . . .Significant

No. of children in family . . . . . .Significant

Family size . . . . . .Significant

No. of children under five . . . . . ._____

Female's income . . . . . Significant

No. of rooms . . . . . .Significant

Time at present address . . . . . ._____

Distance to kin . . . . . ._____

Proportion of child care for which female is responsible . . . . . ._____

Times per month babysitter used . . . . . ._____

Female's income/education ratio . . . . . .Significant

*Significance levels of .05 were used in analysis of variance.

Proportion of children under five . . . . .Significant

Crowding Index . . . . . ._____

IV. CONTINUED ANALYSIS: THE THEORY REVISISTED

At this stage in the analysis, attempts were made to discover: 1. how well a combination of several of the variables could predict the type of case, i.e., the degree of danger to the child; and 2. how well the variables fit the conceptual scheme outlined in section II. Multiple regression analysis was used to accomplish the first task and factor analysis was used for the second.

As the first step in the multiple regression analysis, the types of cases were ordered along the dimension of danger for the child. MINS cases were coded as one, Dep.-Neg. cases as two, and Abuse cases as three. This ordering represents increasing danger to the child in both intensity and time, abuse representing the most extreme danger. This construction allows the type of case to be treated as a quantitative dependent variable.

After several exploratory runs, the regression analysis that appears in table 3 was obtained. This regression equation is composed of significant and nonsignificant variables that tended to behave in the expected direction and that were conceptually important.[3]

It can be seen that the full regression model explains 55% of the variance in the dependent variable, danger to the child. At the .05 significance level, however, only the equation with the first five variables is significant. These five variables explain 53% of the variance.

The standard errors generated in this regression run were of such magnitude that only the signs of the first two Betas can be interpreted with confidence. Both of these Betas are consistent with their respective simple R's and the theory. Betas that are not consistent are those coefficients of Female's Age, Proportion of Children under Five, and Male's Age. The major discrepancy, and

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[3] It should be noted that pair-wise deletion of missing values was used because of the large number of cases that had some missing values.

the only one worth discussing, is Female's Age. The change of sign from the simple R to the Beta can be explained by multicollinearity. Female's Age is is also highly correlated with Child's Age, .45, and Female's Income/Education Ratio, .46. It is assumed that these two strong correlations produce the change in the sign of Beta. Of the eight Beta coefficients for which confidence is lacking in the sign, five are consistent with the theory and earlier findings.

In section I, the concepts of child rearing demands, environmental stress, and environmental restraints were used to provide a framework for the explanation of abuse. To determine if the variables used in the regression analysis could be interpreted within this framework, a factor analysis was performed. The results of this process appear in table 4.

When each variable is considered to be an element of the factor with which it has the highest correlation, a structure that is very consistent with the model emerges. To increase this consistency, Family Size is treated as an element of factor two rather than factor one, a treatment which seems admissible because of the similarity of the two correlations in question. According to the above scheme, the factors composed of the variables listed in table 5 can be labeled as follows:

1. Status Consistency and Stability - This factor is composed of those variables that indicate the degree of environmental stress. The variables in this list are seen to be sociocultural for the most part.

2. Female's Independence from Child Rearing Tasks - This factor provides variables that are an indication of the degree of child rearing stress that the mother might experience. It should be recalled that in light of the earlier findings, Family Size was reinterpreted to indicate the fact the older families would include children who did not require much mothering.

3. Availability of Nonaggressive Alternatives - This factor includes the two variables that give an indication of the kinds of stress-reducing alternatives available to the mother. The relationship between Distance to Kin and Danger to Child was reinterpreted in light of earlier findings to indicate that parents who had next of kin available for child rearing substitutes (substitutes who themselves were aggressive models) would be

susceptible to increased displays of aggression, thus increasing the overall danger to the child. This interpretation is reflected in the Beta of Distance to Kin but not in the factor structure. The Number of Rooms indicates the degree of physical space which allows separation from the source of stress. This variable behaves as expected.

The focus on the female in the study seems justified when the status of the suspected abuser is analyzed. Females were suspected of inflicting the abuse singularly or participating in the abuse in a combined total of 64.5% of the abuse cases. The corresponding figure for the males was only 32.3%.

The results of this study can be expressed quite succinctly in mathematical terms. In equation 1, B represents the vectors of coefficients for the vector variables of v_{i1} = status consistency and stability, v_{i2} = availability of nonaggressive alternatives, and y represents the predicted levels of danger to the child present in families with problems pronounced enough to warrant public agency intervention.

EQ. 1

$$y = b_{ij}v_{i1} + b_{2j}v_{i2} + b_{3j}v_{i3} + c$$

Explicitly the equation becomes:

$$y = (-.44,.14,-.09,.05)\begin{pmatrix} v_{11} \\ v_{21} \\ v_{31} \\ v_{41} \end{pmatrix} + (-.41,-.17,.14,-.09)\begin{pmatrix} v_{12} \\ v_{22} \\ v_{32} \\ v_{42} \end{pmatrix} + (-.17,-.05)\begin{pmatrix} v_{13} \\ v_{23} \end{pmatrix} + 3.07$$

where v_{11} = Female's Income/Education Ratio
v_{21} = Female's Age
v_{31} = Time at Present Address
v_{41} = Male's Age
v_{12} = Child'e Age
v_{22} = Family Size
v_{32} = Proportion of Child Care for which Female is Responsible
v_{42} = Proportion of Children under Five Years of Age
v_{13} = Distance to Kin
v_{23} = Number of Rooms

The predicted values resulting from this equation correlate at .74 with the observed measures. The above equation explains 55% of the variance in the Danger to the Child.

Table 3

Multiple Regression

Summary Table

Variable	Multiple R	R Square	Simple r	Beta
Child's age	0.62	0.39	-0.62	-0.41
Female's income/education ratio*	0.69	0.48	-0.55	-0.44
Proportion of child care for which female is responsible	0.71	0.51	0.23	0.14
Family size	0.72	0.52	-0.31	-0.17
Distance to kin**	0.73	0.53	-0.17	-0.17
Female's age	0.73	0.54	-0.36	0.14
Time at present address	0.74	0.55	-0.29	-0.09
Proportion of children under five	0.74	0.55	0.41	-0.09
Male's age	0.74	0.55	-0.36	0.05
Number of rooms	0.75	0.55	-0.38	-0.05

*Last variable for which confidence regarding the sign of Beta exists.
**Last variable for which the regression equation is signficant.

Table 4

Factor Analysis: Varimax Rotation

Factor	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	3.24	69.10	69.10
2	0.92	19.70	88.70
3	0.53	11.30	100.00

Varimax Rotated Factor Matrix

Variable	Factor 1	Factor 2	Factor 3
Child's age	0.43	0.89	0.05
Male's age	0.63	0.21	0.20
Female's age	0.71	0.20	0.18
Family size	0.34	0.29	-0.12

Table 4 continued

Variable	Factor 1	Factor 2	Factor 3
Number of rooms	0.42	0.49	-0.50
Time at present address	0.53	0.10	-0.22
Distance to kin	0.10	0.16	0.72
Proportion of child care for which female is responsible	0.01	-0.14	-0.04
Female's income/education ratio	0.54	0.16	0.04
Proportion of children under five	-0.36	-0.63	-0.05

Table 5

Reduced Structure of the Child Abuse Model

Factor 1

Status Consistency and Stability

1. Female's Income/Education Ratio
2. Female's Age
3. Time at Present Address
4. Male's Age

Factor 2

Female's Independence from Child Rearing Tasks and Stress

1. Child's Age
2. Family Size
3. Proportion of Child Care for which Female is Responsible
4. Proporation of Children under five.

Factor 3

Availability of Nonaggressive Alternatives

1. Distance to Kin
2. Number of Rooms

V. CONCLUSION

It can be concluded from this study that significant differences exist in the physical and social environment of those families receiving services from the Department of Children and Family Services and that these differences account for well over 50% of the observed levels of danger to the children present in these families.

Stress-producing factors, particularly those acting upon the women in the sample, had the greatest effect. From a theoretical viewpoint, the origins of this stress were found to be in the physical, organic, and sociocultural environment of the families. The findings make a case for a systematic approach to viewing the phenomenon of child abuse.

It is believed that with additional data concerning the psychological system of the family (e.g., attribution mechanisms of explaining behavior) a more complete model that would result in even greater predictability could be developed.

In the above sense, this paper has shared the view expressed by David Gil (1970) that the causes of child abuse are to be found in the environment. It has enlarged the number of variables under consideration beyond those of the psychological system of the abuser.

Designed as a preliminary study, this research project was dependent on limited data sources. But given these limitations, the number of significant findings is encouraging for the use of the systematic, sociological approach in explaining child abuse.

In any possible future studies we hope that operational measures that are more contingent to the conceptual level could be included. Given the research design used in this study, a codified data sheet including variables designed for this type of research would have to be utilized by workers throughout the participating agency to avoid the alternative of expensive interview techniques.

The findings of this study point to several policy implications. The establishment of accessible day care centers could both reduce stress and provide role models with more effective means of coping with the chronic stress of child rearing. Adequate incomes and housing are needed for a stable environment. Family planning could aid in the spacing of births to decrease the demands of child rearing.

If one accepts the assumptions made throughout this study, one is led to the conclusion that the most effective reduction of child abuse could be accomplished by universal remedies applied to particular situations. A current popular solution, diminishing the legal rights of natural parents, facilitates the dissolution of families by state agents. This policy is remedial and would have little affect on reducing the correlates of abuse as outlined in this paper. Just as several important antecedents of abuse seem to be in the sociocultural environments of the family, so should be the responses of social service agencies.

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